Image Scanner

Operator’s Manual

Note to users in the United States of America

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Warnig

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Caution

Properly shielded and grounded cable and connector must be used for connection to host computer in order to meet FCC Emission limits.

Note to users in Canada

This Class B digital apparatus meets all requirement of the Canadian Interference Causing Equipment Regulations.

Remarque concernant les utilisateurs au Canada.

Cet appareil mumérique de la Classe B respecte toutes les exigences du Réglement sur le matériel brouilleur du Canada.

Important

Parts of this manual are subject to change without prior notice.
In no event will the company be liable for direct, indirect, special, incidental, or consequential damages as a result of handling or operating the machine.

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SAFETY INFORMATION

When using your machine, the following safety precautions should always be followed.

⚠ ***WARNING: Ignoring this warning could cause serious injury or even death.***

⚠ ***CAUTION: Ignoring this caution could cause injury or damage to property.***

⚠ ***Symbols ⚠ means a situation that requires you take care.***

Do NOT carry out the operation represented by the symbol ⃠. This example means "Do not take apart."

Symbols means you MUST perform this operation . This example means "You must remove the wall plug."

⚠ *WARNINGS:*

- ***Only connect the machine to the power source described in the Important Information Section.***
- ***Avoid multi-wiring.***
- ***Do not damage , break or make any modifications to the power cord. Do not place heavy objects on it, pull it hard or bend it more than necessary. These actions could cause an electric shock or fire.***
- ***Do not plug or unplug the power cord with your hands wet. Otherwise, an electric shock might occur.***

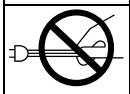
- ***Make sure the wall outlet is near the machine and freely accessible so that in event of an emergency it can be unplugged easily.***

- ***Do not remove any covers or screws other than those specified in this manual. Some parts of the machine are at a high voltage and could give you an electric shock. When the machine needs to be checked, adjusted, or repaired, contact your service representative.***
- ***Do not take apart or attempt any modifications to this machine. There is a risk of fire, electric shock, explosion or loss of sight.***

- ***If the machine looks damaged or breaks down, smoke is coming out, there is a strange smell or anything looks unusual, immediately turn off the power switch then unplug the power cord from the wall. Do not continue using the machine in this condition. Contact your service representative.***
- ***If metal, liquid or foreign matter falls into the machine, turn off the power switch, and unplug the power cord. Contact your service representative. Do not keep using the machine with a fault or defect.***

- ***Do not put any metal objects or containers holding water (e.g.vases, flowerpots, glasses) on the machine. If the contents fall inside the machine, a fire or electric shock could occur.***

⚠ *CAUTIONS:*

	• ***Keep the machine away from humidity and dust. A fire or an electric shock might occur.*** • ***Do not place the machine on an unstable or tilted surface. If it topples over, it could cause injury.***
	• ***When you move the machine, unplug the power cord from the wall outlet to avoid fire or electric shock.*** • ***When the machine will not be used for a long time, unplug the power cord.***
	• ***When you pull out the plug from the socket, grip the plug to avoid damaging the cord and causing fire or electric shock.***
	• ***If you use the machine in a confined space, make sure there is a continuous sir turnover.***

IMPORTANT INFORMATION

1. Read all of these instructions and keep them for later reference.
2. Follow all warnings and instructions marked on the machine.
3. Unplug this machine from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners.
4. Do not use this machine near water.
5. Do not place this machine on an unstable cart, stand, or table. The machine could fall and suffer serious damage.
6. Slots and openings in the cabinet and the back or bottom are provided for ventilation; to ensure reliable operation of the machine and protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the machine on a bed, sofa, rug, or other similar surface. This machine should never be placed near or over a radiator or heat register. This machine should not be placed in a built-in installation unless proper ventilation is provided.
7. This machine should be operated from the type of power source indicated on the marking label. If you are not sure of type of power available, contact your dealer or local power company.
8. This machine is equipped with a 3-wire grounding-type plug, a plug having a third (grouding) pin. This plug will only fit into a grounding -type outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your outlet. Do not defeat the purpose of the grounding-type plug by removing its grounding pin. (This does not apply in countries in which a 2-wire, nongrounded type of plug is used.)
9. Do not place this machine where the cord will be walked on.
10. If an extension cord is used with this machine, make sure that the total of the ampere ratings on the devices plugged into the extension cord does not exceed the extension cord ampere rating. Also make sure that the total of all machines plugged into the wall outlet does not exceed 15 amperes.
11. Never push objects of any kind into this device through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a risk of fire or electric shock. Never spill liquid of any kind on the machine.

12. Except as specifically explained in the operator's manual, do not attempt to service this device yourself. Opening or removing those covers that are marked "Do Not Remove" may expose you to dangerous, voltage points or to other risks. Refer all servicing in those compartment to service personel.
13. Unplug this machine from the wall outlet and refer servicing to qualified service personal under the following conditions;

    A. When the power cord or plug is damaged or frayed.
    B. If liquid has been spilled into the machine.
    C. If the machine has been exposed to rain or water.
    D. If the machine does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of other controls may result in damage and will often required extensive work by a qualified technician to restore the machine to normal operation.
    E. If the machine has been dropped or the cabinet has been damaged.
    F. If the machine exhibits a distinct change in performance, indicating a need for service.

14. Make sure that your wall outlet is close to the machine and is easily accessible.
    When you plug the machine into the outlet, make sure the plug is inserted firmly.
15. The main plug on this machine must be used to disconnect main power.
    Two kinds of size notation are employed in this manual.
16. Power Source: 120 V, 60 Hz, more than 10 A
    Please make sure to connect the power cord to a power source as above.
17. In accordance with IEC417, this machine uses the following symbol for the main switch:

    | means POWER ON

    ○ means POWER OFF

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INTRODUCTION

This manual contains detailed instructions on the operation and maintenance of your scanner. To obtain maximum versatility from your scanner, you should carefully read this manual and follow the instructions it provides.

Make sure to read the “Safety Information” section of this manual before using the scanner. This section contains important information related to user safety and to preventing equipment problems.

Overview

This scanner allows you to send scanned data to your host computer using a SCSI II connection.

A variety of powerful features includes an Automatic Document Feeder (ADF) that allows you to scan multiple pages. Optional equipment includes an Image Processing Unit.

Features

- ❒ Automatic Document Feeder (ADF)
- ❒ Prescanning
- ❒ Scanning speed of 24 pages per minute (ppm) (200 dpi scanning of A4-size documents containing black and white line art)
- ❒ Scanning resolution of 60, 75, and 100 to 800 dots per inch (dpi) (600 dpi maximum resolution with ADF)
- ❒ Scanning compositions of line art, halftone, and gray scale.
- ❒ Area extraction
- ❒ Section area (multi-area settings)
- ❒ Brightness, contrast, and threshold value adjustments
- ❒ Gamma correction settings
- ❒ Binary filters
- ❒ Parameter download
- ❒ Document size detection (with ADF only)
- ❒ SCAM compatibility

Options

The following are available to you as options that you can add to the basic components provided with your scanner:

- Image Processing Unit
- Operation Panel Kit

Using this Manual

This manual explains how to configure and use the scanner. This section provides short descriptions of the chapters that make up this manual, the conventions used throughout the manual, and various publications that may be of further use to you when using the scanner.

This User's Manual contains the following chapters and appendices:

- **Chapter 1: Setting Up the Scanner** - provides information on preparing to use the scanner.
- **Chapter 2: Using the Scanner** - describes operation of the scanner's hardware.
- **Chapter 3: Maintenance** - tells you what you need to know about keeping your scanner in good working condition.
- **Chapter 4: Troubleshooting** - contains information about correcting problems you might encounter.
- **Chapter 5: Scanner Specifications** - contains hardware specifications for the scanner and its interfaces.
- **Appendix A** - provides illustrated examples of the images your scanner can produce using various scanning parameters.

A glossary and an index are provided at the end of this manual.

Conventions

The following conventions are used throughout this manual:

Square brackets - the names of the hard keys, soft keys and buttons on the scanner and on your host computer are enclosed in square brackets. For example, the **[Start]** button.

Italics - names of documents are shown in italics.

Note: *"Notes" provide general information to help you complete a task or further understand the text.*

General Information

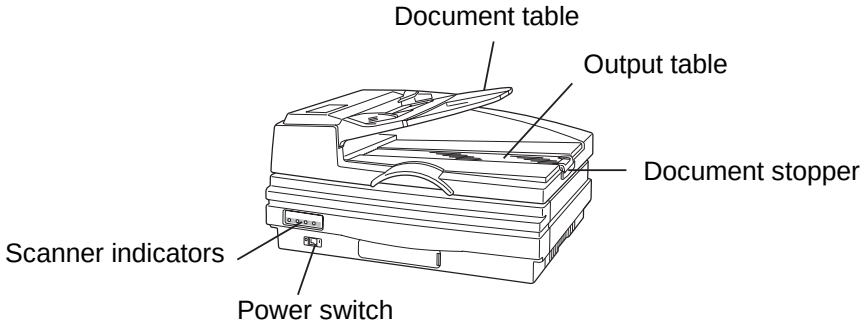
- Some of the illustrations of the scanner in this manual may differ slightly from the actual appearance of your scanner.
- Some of the options described in this manual may not be available in your country. Contact your local dealer for details on the options available to you.
- Two kinds of size notation are employed in this manual.

SETTING UP THE SCANNER

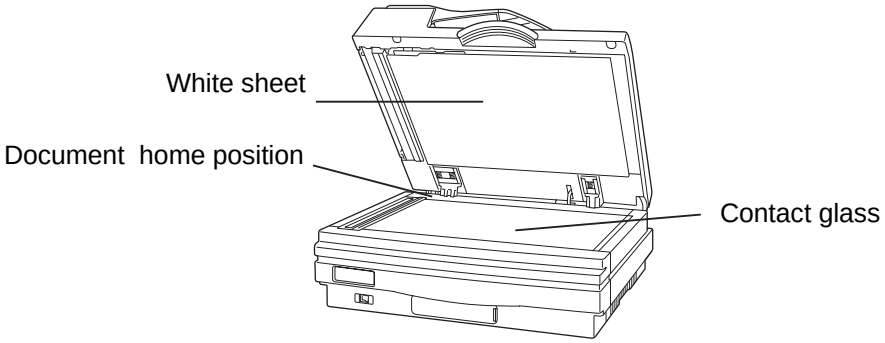
GENERAL GUIDE

The following illustrations show the names of the various components that make up the scanner.

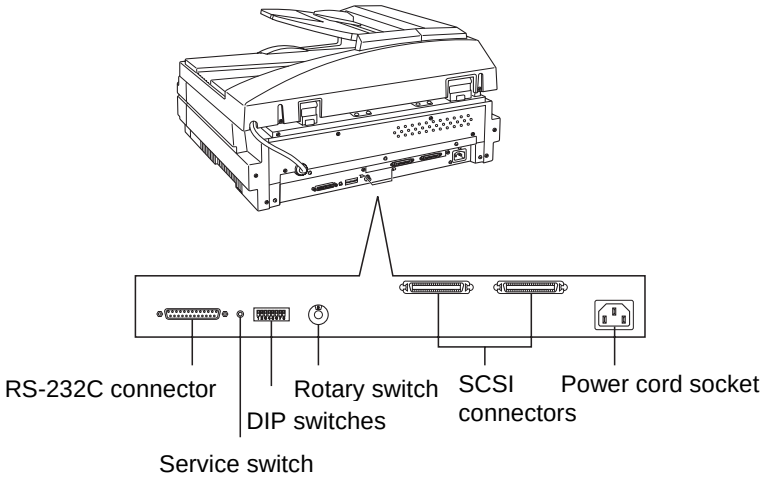
Front View — Document Feeder Closed



Front View — Document Feeder Open

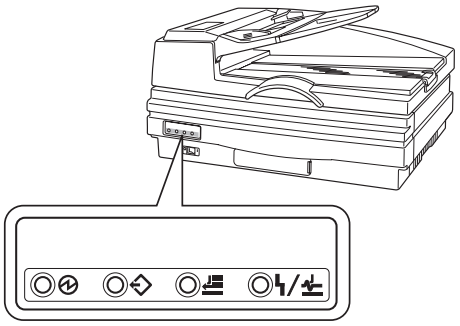


Rear View



CAUTION: Do not touch the service switch. This switch is provided for use by service personnel only.

Scanner Indicators



Power on

Machine busy

Document in place

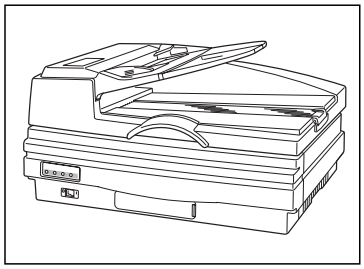
Error

CHECKING THE PARTS

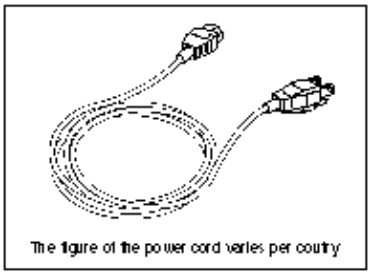
Make sure that you have all the parts shown below in your packing box.

Parts list

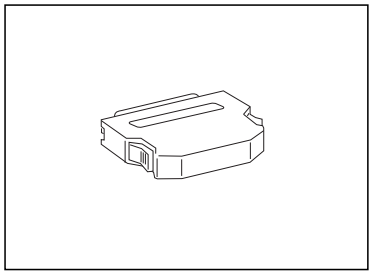
Name	Q'ty	Name	Q'ty
Scanner	1	Power cord	1
Terminator	1	driver soft & manual (ISIS)	1set
Operator's manual	1		



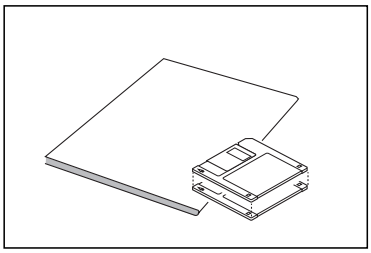
Scanner



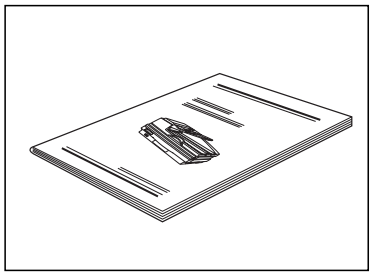
Power cord



Terminator



driver soft & manual

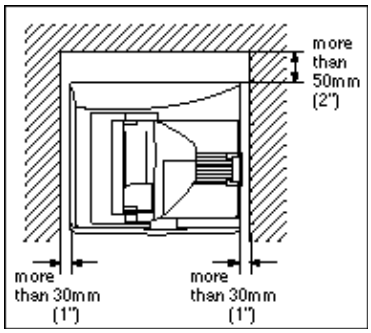


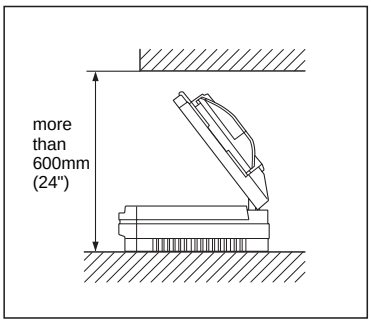
Operator's manual

SCANNER LOCATION

Before actually setting up the scanner, take a few minutes to consider where you plan to use it. Remember the following points when doing this.

- ❒ Set up the scanner in an easily accessible area with temperatures between 50 and 90 degrees Fahrenheit (10 to 32 degrees Celsius) with a relative humidity of 20 to 80 percent.
- ❒ Make sure that the scanner is in an area with a minimum clearance of 600 mm (24”) above, 30 mm (1”) on each side, 50 mm (2”) in the rear, and a comfortable working area in the front.
- ❒ Place the scanner on a level, stable, vibrating-free surface.
- ❒ Place the scanner in an area that is not exposed to large amounts of dust and direct sunlight.
- ❒ Do not place items on top of the scanner.





CAUTION: Do not place the scanner directly below an air conditioning or heating vent. Sudden temperature changes can cause condensation within the scanner.

Note: *For the unpacking and installation of the scanner, refer to the installation procedure sheet.*

CONNECTING TO THE HOST

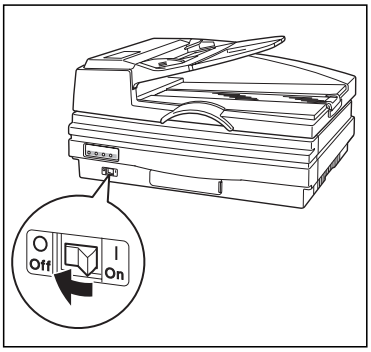
Use the following procedure to connect the scanner to a host computer using a SCSI cable.
Note the following important points when making SCSI cable connections.

- ❒ Turn all devices being connected before making any connections.
- ❒ The use of cables other than the specified shielded cables or their equivalents will invalidate your scanner's certification and can cause interference levels that exceed the limits established for this equipment.
- ❒ The total length of the SCSI bus should not exceed six meters.
- ❒ Either of the scanner's two SCSI connectors can be used for the connection, but any unused SCSI connector must be capped with a terminator.

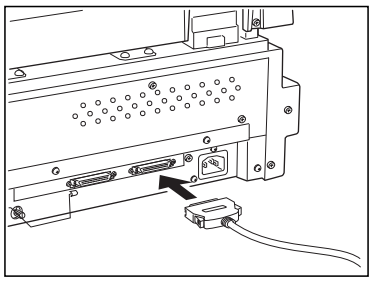
***Note**:The RS-232C connector is employed only when the optional Operation Panel is being used.*

To connect to your host

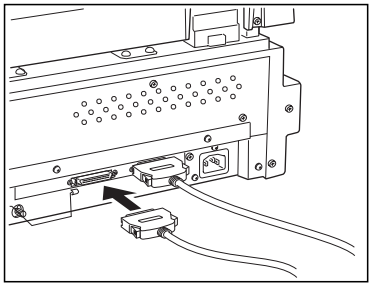
1 Make sure that the scanner and all the other devices in the SCSI chain are turned off.



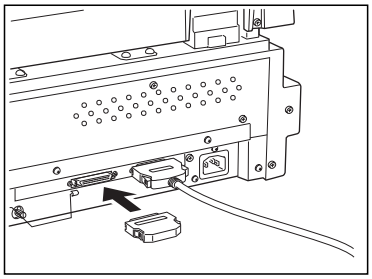
2 Plug one end of the shielded high density 50-pin SCSI II cable (ANSI-compliant*1) into the SCSI II port located on the back of the scanner.



3 If you do not plan to connect anything to the other port, cap it with a terminator*2.



4 Plug the other end of the SCSI cable into the host computer or other peripheral.



*1 SCSI Cables

There are a variety of different SCSI connector types, including the high-density 50-pin connector, the D-sub 25-pin connector, and the 50-pin flat connector. Both of the SCSI ports of this scanner require high-density 50-pin connectors. When choosing a SCSI cable, get one that has a high-density 50-pin connector on one end (to connect to the scanner), and a connector that meets the needs of the port of your computer or the device you are connecting to. Also make sure that the SCSI cable you use is ANSI-compliant.

*2 Terminators

Generally you need to have two terminators at each end of a SCSI chain. If you connect this scanner at the end of a SCSI chain, you should cap the scanner's unused SCSI port with a terminator. If the scanner is located inside of a SCSI chain that is already terminated, you do not need to terminate the scanner's other port.

SETTING THE SCSI ID

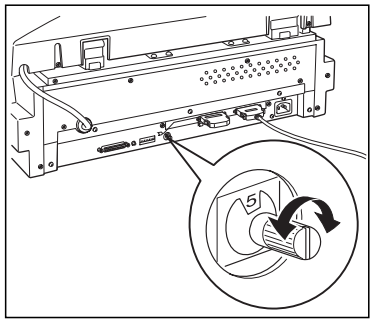
Each device in a SCSI chain must have its own unique ID. Use the procedure below to set the scanner's SCSI ID.

Note the following important points when setting the scanner's SCSI ID.

- ❒ No two devices in the SCSI chain can have the same SCSI ID.
- ❒ You can change the scanner's SCSI ID while power is on, but the new setting does not take effect until you reset the scanner.
- ❒ Never set 8 or 9 as the scanner's SCSI ID. Though 8 and 9 settings are available, you should use IDs 0 through 7 only.

To set the scanner's SCSI ID

1 Turn the rotary switch on the back of the scanner until the SCSI ID number you want to use is visible.



2 If the scanner is on when you change the SCSI ID, reset it by turning power off and then back on again.

Note: *Whenever there are two these scanners connected in the same SCSI chain, be sure to set SW1 of one of the scanner's DIP switches to ON.*

USING TWO SCANNERS IN THE SAME SCSI CHAIN

Two of these scanners can be included in the same SCSI chain. In such a case, you must make sure to correctly make certain settings in order to avoid conflicts in the chain. The settings you should make depends on whether or not the computer you care connected to is equipped with a SCAM adapter.

Without SCAM Adapter

In this case, just make sure that each scanner has its own unique SCSI ID. No other setting is required.

With SCAM Adapter

When the computer you are connecting to is equipped with a SCAM adapter, you must assign each scanner a unique SCSI ID and also change the setting of DIP switch 1 for one of the scanners to further protect against data communication conflict.

- DIP switch 1 of one of the scanners must be OFF (default setting).
- DIP switch 1 of the other scanner must be ON.

To change the setting of DIP switch 1

1. Change the position of DIP switch1 on the back of the scanner to ON.

2. Turn power off and then back on again.

CONNECTING THE POWER CORD

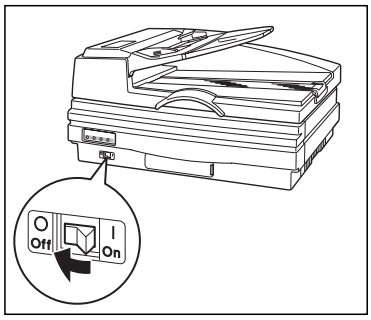
Use only the power cord that comes with the scanner to connect it to a power source.

Note the following important points when connecting the power cord.

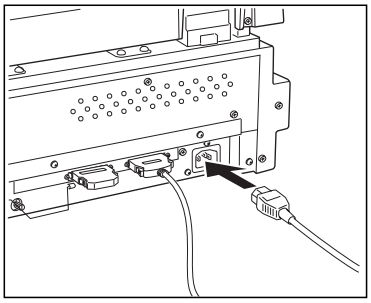
- ❒ Use only the power cord supplied with the scanner.
- ❒ Connect the power cord to the scanner and plug it into a wall outlet before turning on the power switch.
- ❒ The plug is equipped with a grounding pin, and must be plugged into a grounded outlet.

To connect the power cord

1 Make sure that scanner power is turned off.



2 Attach the power cord to the power cord socket on the back of the scanner.



3 Plug the other end of the power cord into a standard grounded wall outlet.

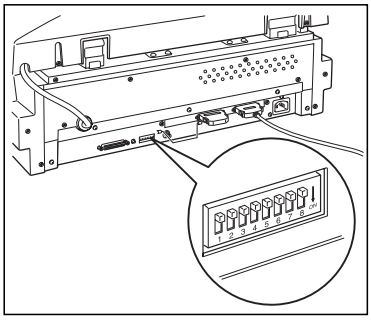
TURNING ON THE SCANNER

Use the procedure below to turn on scanner power.

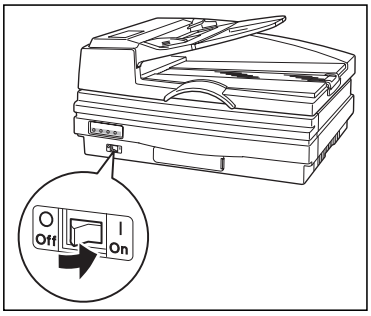
To turn on the scanner power

1 Check to make sure that the DIP switches on the back of the scanner are set correctly.

Note: *The setting as shown is one example.*



2 Use the power switch to turn on scanner power.



DIP SWITCH SETTINGS

DIP switches on the back of the scanner can be used to control certain scanner features and functions. The following describes the DIP switch settings that can be made by you.

Note: *You can change the settings of DIP switches 1, 3, and 4 only. Never change the settings of switches 2, 5, 6, 7, or 8.*

Switch 1 - SCAM Function

This switch is used only when there are two units of this scanner model connected in the same SCSI chain, and the computer is equipped with a SCAM adapter. In such a case, Switch 1 of one scanner must be set to ON (SCAM disabled), while Switch 1 of the other scanner must be set to OFF(SCAM enabled).

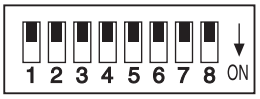
Switch 3 - Paper Size

This switch specifies the standard paper sizes the scanner should apply. OFF specifies North American paper sizes, while ON specifies European paper sizes.

Switch 4 - IS410 Mode

This switch switches between Normal Mode and IS410 Mode. OFF specifies Normal Mode, while ON specifies IS410 Mode.
If your application's driver supports the IS410 but not this scanner, you can set this DIP switch to its ON position to enable IS410 emulation. Because of differences between the IS410 and this scanner, however, we cannot guarantee 100% compatibility when IS410 emulation is being used. We recommend that you obtain the appropriate driver from your software dealer.

Default settings



To change DIP switch settings

1. Turn off the scanner and make the DIP switch settings described above.

2. Turn the scanner back on.

INSTALLING THE DRIVERS

You must intall the scanner driver software on the host computer before you can use the scanner.

Installing the TWAIN Scanner Driver

Follow these steps to install the TWAIN scanner driver on your Windows 3.1, Windows 95, and Windows NT system:

1. Insert the “TWAIN Scanner Driver for Windows” diskette into the 3.5 inch disk drive on your host computer.
2. Close any applications that are currently running.
3. From the Run window type “**a:** (or the letter that represents the drive in which you placed the installation diskette) **setup.exe**”.
4. Click [**OK**] and follow the installation instructions that display on the screen.

Installing the ISIS Scanner Driver

Follow these steps to install the ISIS scanner driver on your Windows 3.1, Windows 95, and Windows NT system:

1. Insert the “ISIS Scanner Driver for Windows” diskette into the 3.5 inch disk drive on your host computer.
2. Close any applications that are currently running.
3. From the run window type “**a:** (or the letter that represents the drive in which you placed the installation diskette) **setup.exe**”.
4. Click [**OK**] and follow the installation instructions that display on the screen.

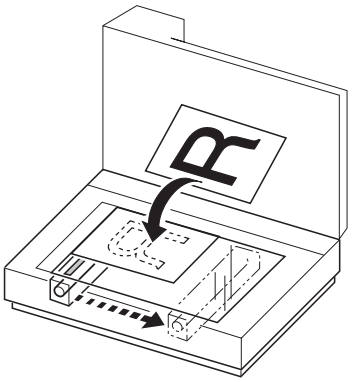
USING THE SCANNER

INTRODUCTION

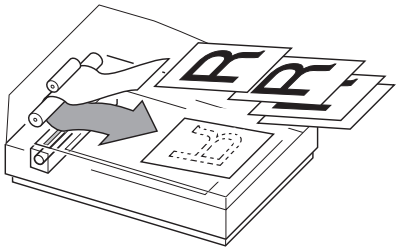
This chapter describes what you need to know to how to use the scanner. Note that only operation of the scanner's hardware is covered here. For details about using the scanner's software driver you need to consult the separate Scanner Driver Manual for ISIS and the Driver Online-help for TWAIN.

PLACING ORIGINALS ON THE SCANNER

You can place your originals on the scanner for scanning in one of two ways: you can place them manually directly onto the glass one at a time (Book Mode), or you can use the document feeder to feed the originals automatically (Document Feeder Mode).
The Book Mode is the only way to scan books, magazines, and other bound documents. Of course, you could also scan single sheets of paper this way, too. The Document Feeder Mode is ideal when you have many single sheets to scan.



You simply place the originals onto the document table and they will feed into the scanner automatically.



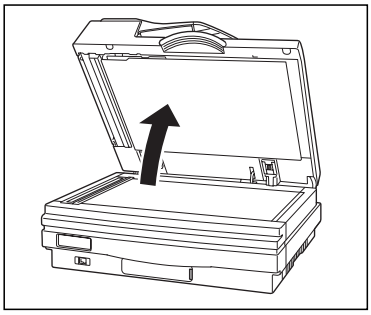
USING THE BOOK MODE

With the Book Mode, you place the object you want to scan directly onto the glass. You must use this mode when scanning pages in a book, magazine, or other bound document. You can scan a page that contains figures written in pencil, toner, ink, ball point pen, or anything else that does not stick to the scanner's glass.

CAUTION: Never place any object that weighs more than 10 kg onto the scanner's glass.

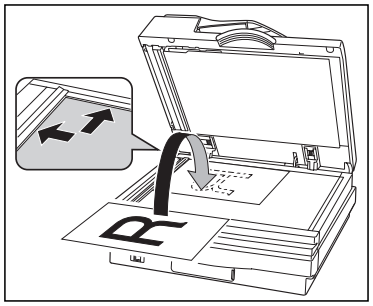
To manually place an original onto the scanner

1 Open the document feeder.

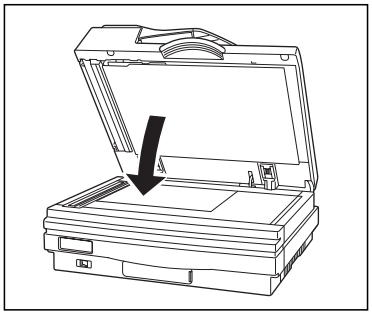


2 Place the original face down onto the glass with the upper left corner of the surface being scanned located at the document home position.

Also make sure to smooth out the original with your hand to make sure there is no air between the original and the contact glass.



3 Slowly close the document feeder.



4 Execute the scan operation from the host computer.

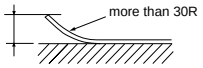
⚠ ***CAUTION: Take care to avoid strong pressure on or impact to the scanner's glass while the document feeder is open, otherwise glass is broken and this may cause injury. Also keep your fingers away from the scanner's hinges to avoid pinching your fingers whenever opening or closing the document feeder.***

USING THE DOCUMENT FEEDER MODE

The Document Feeder Mode lets you automatically feed single-sheet originals from the document feeder for high-speed scanning.

The following defines the type of original that can be scanned using the Document Feeder Mode. Any original that does not meet the following specifications must be scanned using the Book Mode.

Size	Length: 128 to 1260 mm (5.04" to 49.61") Width: 105 to 297 mm(4.13" to 11.69")
Weight	52.3 to 104.7 g/m^2 (14 lb to 28 lb)
Stacking	74.8 g/m^2(20 lb) paper x 30, 104.7 g/m^2(28 lb) paper x 20
Curl	Front curl: Less than 5 mm (0.2")



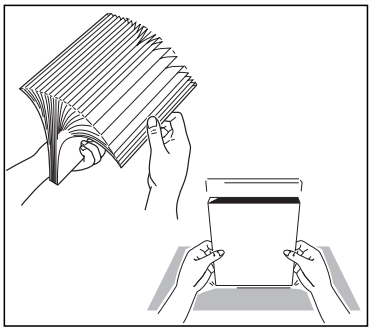
If the originall is curled, flatten it to within the above limitations.

Note: *Using the Document Feeder Mode with certain types of originals can cause misfeeding and damage to the original. Be sure to use the Book Mode whenever scanning the following types of originals.*

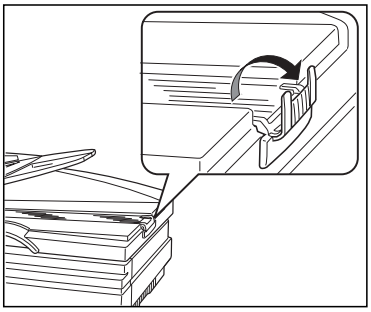
- ❒ Originals whose measurements are outside the size ranges specified above.
- ❒ Originals with staples or paper clips attached to them.
- ❒ Originals with holes (more than ∅12 mm)or tears.
- ❒ Originals that are torn, folded, or wrinkled.
- ❒ Originals consisting of pieces pasted together.
- ❒ Originals printed on thermal paper, art paper, photographic paper, carbon paper, electrolytic paper, or any other treated paper.
- ❒ Originals with appendages such as index tabs, stickers, etc.
- ❒ Originals printed on tracing paper or other types of paper that do not slide easily.
- ❒ Originals printed on post cards or paper whose thickness is not proper.
- ❒ Books or other bound pages.
- ❒ Originals printed on OHP film, tracing paper, or other highly transparent paper.

To use the document feeder

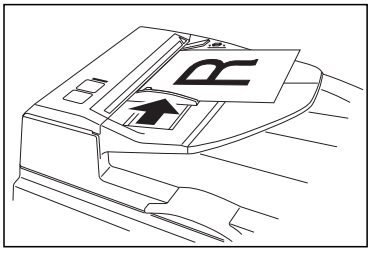
1. Fan the stack of originals and even up its four sides.



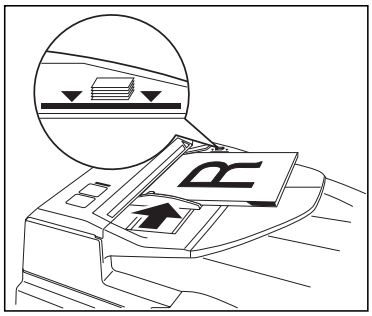
2. Raise the document stopper.



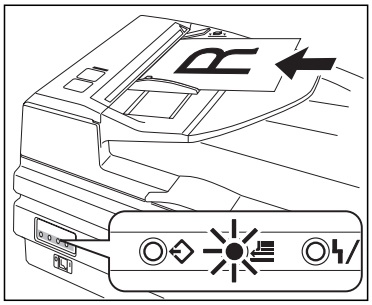
3. Squeezing the guide lock on the left side of the guide, adjust the document guides so they match the wide of the original. Be sure the adjust the guides before setting the stack of originals onto the document feeder.



Note: *Make sure the top of the stack of originals is not above the top lines marked on the guides.*



4 Place the stack of originals onto the document feeder, and slide them into the feeder until the indicator lights.



5 Execute the scan operation from the host computer.

MAINTENANCE

OVERVIEW

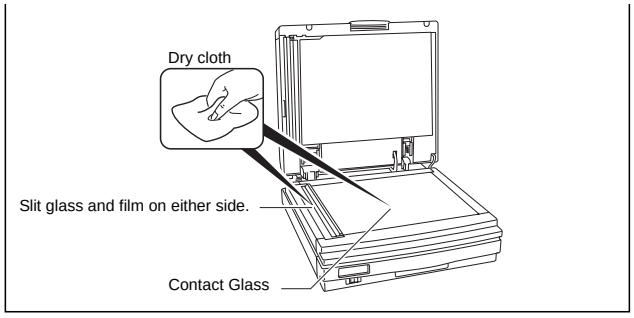
This chapter tells you everything you need to know about maintenance of your scanner and procedures to take to solve scanner problems. This information helps keep your scanner in good working condition and helps you correct any problems that might occur.

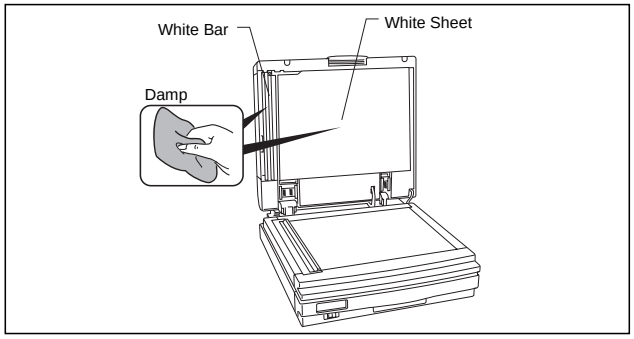
CLEANING THE SCANNER

This section describes the cleaning requirements of your scanner. Remember that keeping scanner components clean is the secret to both good scanning results and long scanner life.

Contact Glass, Slit Glass, White Sheet, White Bar

Dirty glasses or white sheet and bar adversely affects the quality of your scanned images. Be sure to inspect these areas for signs of dirt each time you use the scanner. If they appear dirty, wipe them off with a dry or damp soft cloth before you begin your scan job.



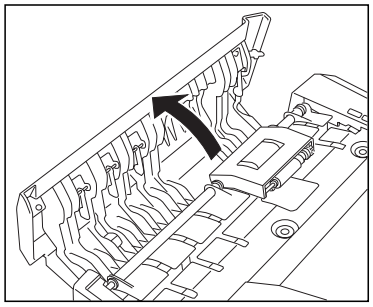


⚠ ***CAUTION: Take care to avoid strong pressure on or impact to the scanner's glass while the document feeder is open, otherwise glass is broken and this may cause injury. Also keep your fingers away from the scanner's hinges to avoid pinching your fingers whenever opening or closing the document feeder.***

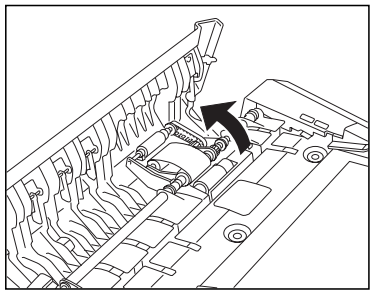
Rollers and Belt

Feed errors such as jams or multiple feeding indicate that the scanner's rollers or belt may need cleaning. Open the document feeder cover to inspect the rollers and belt for dirt. If they are dirty, clean them with a damp cloth.

1 Open the document feeder cover.

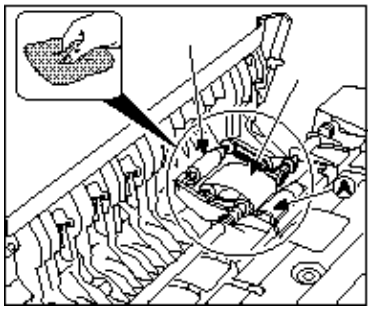


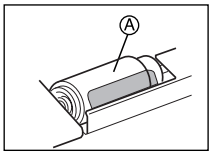
2 Open the feed roller unit.



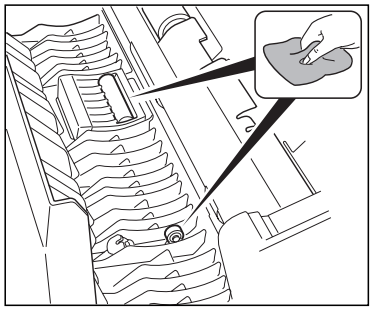
3 Use a damp soft cloth to clean the rollers and belt inside the feed roller unit. Rotate the rollers by hand as you wipe them.

Note: *Take care that you do not damage the nearby mylar guide when cleaning Roller A. One way to do this is to use the procedure on page 3-5 to remove Roller A from the scanner before cleaning it.*





4 After closing the feed roller unit, use a damp soft cloth to clean the two rollers inside the document feeder cover.



If feed errors continue to occur after you clean the rollers, it may mean that it's time to replace the roller set (see the next section).

Note: *Always clean the feed rollers after scanning documents that smear or contain substances that may be transferred to the rollers.*

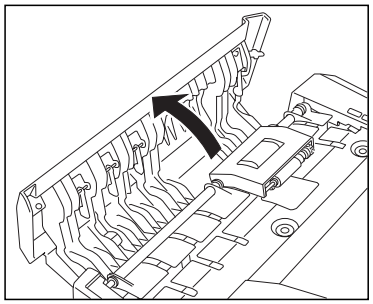
REPLACING THE ROLLER SET

Your scanner requires periodic cleaning of the roller set in order to keep originals feeding properly. If feed problems continue to occur even after you clean the roller set, it means that you must replace the roller set with a new one.

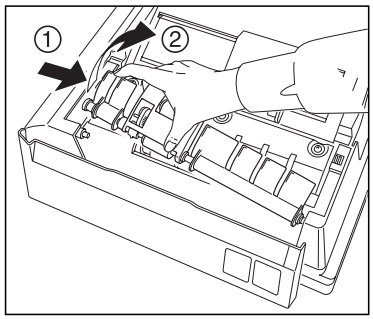
Contact your dealer for information about purchasing a roller assembly.

⚠ ***CAUTION: Be sure to turn off power before replacing the roller set.***

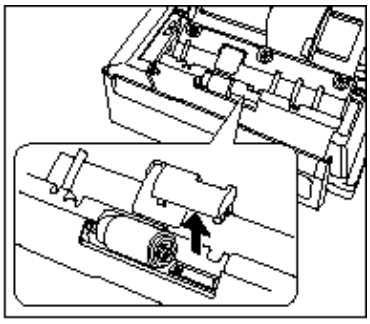
1 Open the document feeder cover.



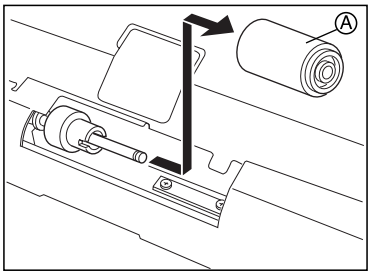
2 Raise the transparent plastic guide, and then pick the feed roller unit up and out of the feed scanner

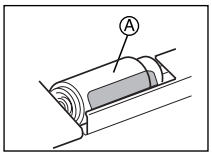


3 Pull out the black plastic cover next to the large white roller, and then remove the white roller.

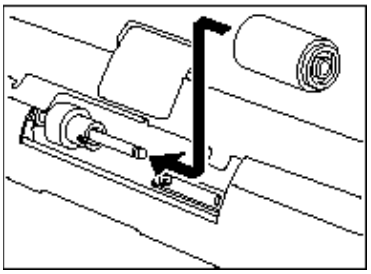


Note: *Take care that you do not damage the nearby mylar guide when removing Roller A.*

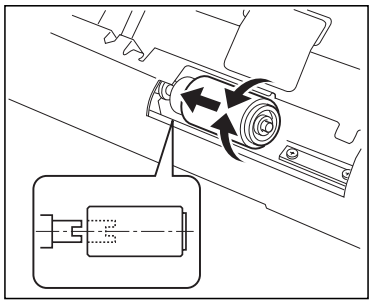




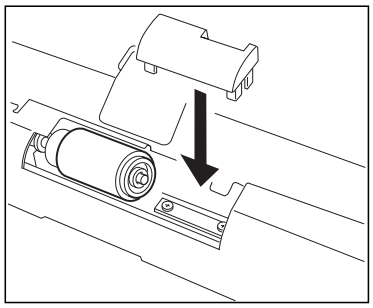
4 Insert a new white roller into the scanner. Press the roller onto the spindle while rotating it from side to side until you feel the roller snap into place.



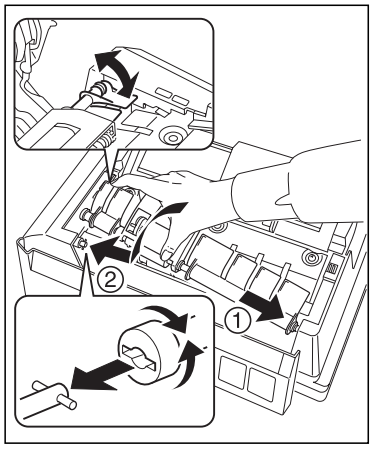
Note: *Take care that you do not damage the nearby mylar guide when inserting Roller A.*



5 Replace the black plastic cover.



6 Install the new feed roller unit into the scanner as shown in the illustration. Double check to make sure that the pins on the end of the shaft that is towards the back of the scanner seat properly into the holes that are provided. Grasp the shaft and rotate it in both directions until the shaft seats properly.



7 Close the document feeder cover.

TROUBLESHOOTING

OVERVIEW

This chapter provides information on problems that may occur while using the scanner, as well as the actions you can take to solve the problems. Operational errors are indicated by indicators located on the front of the scanner, above the power switch.

Should an error or problem persist even when you use the procedures provided in this section, contact your service representative for assistance. Attempting to repair the scanner yourself is not covered by the warranty and may cause further damage. When you contact your service representative, make sure to have the following information available:

- ❒ A record of the problem that occurred and the steps you took to eliminate the problem.
- ❒ The name and serial number of the scanner.
- ❒ Configuration information for the scanner.
- ❒ Information on the scanner driver you are using.

Scanner Problems and Solutions

This section contains information on specific scanner problems that can occur, and the procedures you follow to correct the error.

Document Feeder Cover Open

Indicator				
Color	Green	Green	Green	Red
Status	On	Off	Off	On

This error indicates that the document feeder cover is not closed.

1 Close the document feeder cover, making sure it is closed securely.

Document Feeder Raised

Indicator				
Color	Green	Green	Green	Red
Status	On	Off	Off	On

This error indicates that the document feeder is raised.

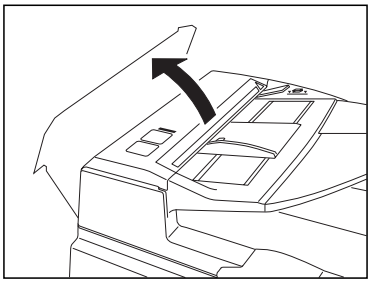
1 Lower the document feeder cover, making sure it goes all the way down.

Paper Jam

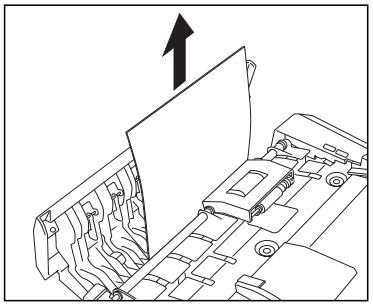
Indicator				
Color	Green	Green	Green	Red
Status	On	Off	Blinking	On

This error indicates that an original is jammed in the document feeder.

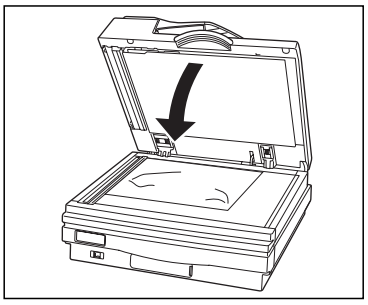
1 Open the document feeder cover. If you cannot see the original, skip to step 4.



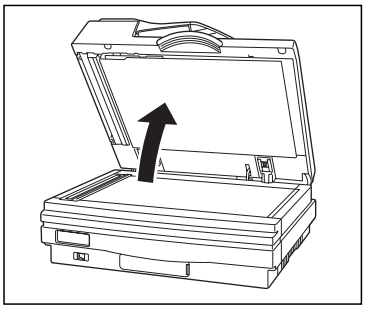
2 Carefully remove the jammed original.



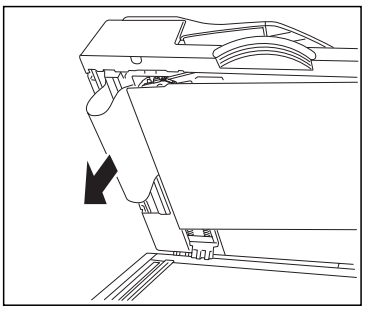
3 Inspect the original for tears or curling. If it is in good condition, return it to the starting position on the document feeder and restart the scan job. If the original is wrinkled, smooth it out and scan using the Book Mode.



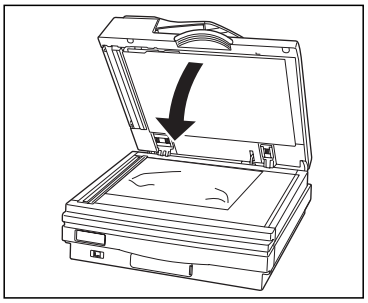
4 Open the document feeder.



5 If the jammed original is visible, carefully remove it and close the cover.



6 Inspect the original for tears or curling. If it is in good condition, return it to the starting position on the document feeder and restart the scan job. If the original is wrinkled, smooth it out and scan using the Book Mode.

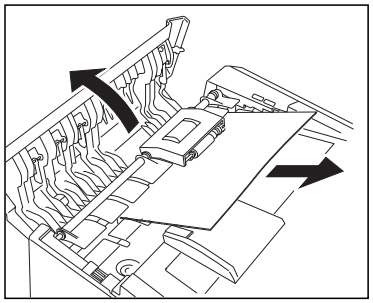


Paper Misfeed

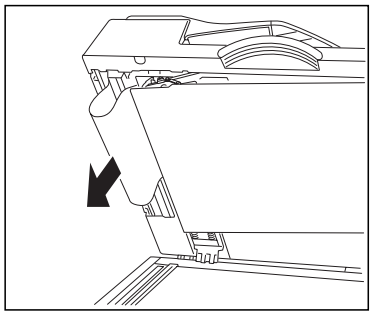
Indicator				
Color	Green	Green	Green	Red
Status	On	Off	On	On

This error indicates that the document feeder could not feed the originals for some reason.

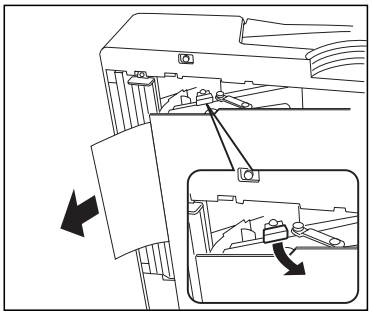
1 Open the document feeder cover and carefully remove the original as shown in the illustration. If the original does not pull out easily, perform step 2.



2 Raise the document feeder and carefully remove the original as shown in the illustration. If the original does not pull out easily, perform step 3.

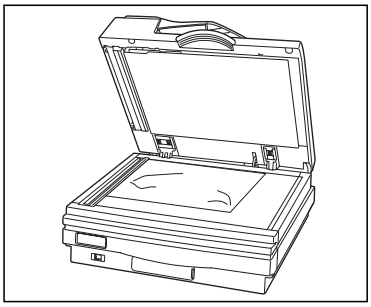


3 Pull the green release lever until the white sheet detaches, and carefully remove the original as shown in the illustration. Note that the white sheet is held in place by a strong magnet, so considerable force must be applied to the green release lever to pull it out.



4 Return the green release lever to its original position.

5 Inspect the original for tears or curling. If it is in good condition, return it to the starting position on the document feeder and restart the scan job. If the original is wrinkled, smooth it out and scan using the Book Mode.



System Error

Indicator				
Color	Green	Green	Green	Red
Status	Flashing	Flashing	Flashing	Flashing

This error indicates a scanner system error.

1 Turn the scanner off.

2 Turn the scanner back on.

Note: *If this error persists, contact your service representative.*

Other Problems

The following table shows other possible problems that are not indicated by the indicators, along with the actions you should take to correct them.

Condition	Action
Scanner is not turned on.	❒ Make sure that the power switch is on. ❒ Make sure that the power cord is properly plugged in to an appropriate power outlet.
The scanner does not work properly.	❒ Make sure the SCSI cable is connected properly. ❒ Check that the host computer is operating correctly. ❒ Make sure the SCSI ID is correct. ❒ Make sure the DIP switches are set correctly. ❒ Verify that you have the SCSI Terminator attached correctly.
Frequent misfeeds	❒ Check to make sure that rollers are clean. ❒ Verify that the size and weight of the paper you are using meets the paper specifications for the Document Feeder . ❒ Verify whether the paper is folded, wrinkled, damp, or curled. ❒ Check for any misfed paper or other foreign objects in the scanner. ❒ Verify that the page size setting is correct for the paper contained in the feeder tray. ❒ Clean or replace the roller set.
Scanned image abnormalities	❒ Check if the glass is dirty. ❒ Check to make sure that rollers are clean.

SCANNER SPECIFICATIONS

SPECIFICATIONS

This section contains the electrical and hardware specifications for your scanner as well as information on the paper feed capabilities provided by the Automatic Document Feeder (ADF).

Electrical and Hardware Specifications

Note: *All specifications are subject to change without notice.*

Type:	Desktop type scanner
Scanning Method:	Flat bed and sheet feed
Maximum Scanning Area:	Book Mode: 297 x 432 mm (11.70” x 17.02”) Document Feeder Mode: 297 x 1260 mm (11.70” x 49.64”)
Maximum Resolution:	Book Mode: 800 dpi Document Feeder Mode: 600 dpi
Grayscale:	4 or 8 bits/pixel
Maximum Speed:	24 ppm (A4/Letter portrait 200 dpi black and white scanning with document feeder. * Note that actual scanning speed depends on the system environment.
Interface:	SCSI II RS-232C (25-pin female) * RS-232C interface is provided for the optional operation panel only.
Power:	100 to 120V AC (50/60Hz)
Power Consumption:	Standby: 27W (max.) Processing: 72W (max.)
Dimensions:	550(W) x 500(D) x 300(H) mm 216.5”(W) x 196.8”(D) x 118.1”(H)
Weight:	Approximately 28 kg (61.74lb) (max.)

Environmental Specifications

Temperature:	10 to 32 degrees Celsius
Humidity:	20 to 80 percent
Air circulation:	30 cubic meters, per person, per hour
Clearance:	600 mm (24”) above 30 mm (1”) left and right sides 50 mm (2”) rear

INTERFACES

This section provides information on the shielded high density 50-pin SCSI II cable you use to connect your scanner to your host computer, on the SCSI II Terminator plug you use on your machine, and on the RS-232C interface.

It is your responsibility to make sure that you have a SCSI II port available on the host computer and to provide the SCSI II cable. In addition, you must connect a SCSI II terminator plug to the top SCSI II port on the machine. The SCSI II cable is not provided with the machine.

☛ Refer to the “Setting up the Scanner” chapter in this manual for information on how to connect the scanner to your host computer.

SCSI II Interface

The SCSI II connection is a standard SCSI II interface and requires a shielded high density 50-pin SCSI II bus and tag cable with an A Connector and a SCSI II port available on the host computer. The terminator is a standard SCSI II Terminator plug and is provided with the scanner.
The table below lists the high density 50-pin designations and associated signals for SCSI II communications.

Shielded high density 50-pin SCSI II pin designations

Code	Signal	Pin
GND	Signal Ground	1
GND	Signal Ground	2
GND	Signal Ground	3
GND	Signal Ground	4
GND	Signal Ground	5
GND	Signal Ground	6
GND	Signal Ground	7
GND	Signal Ground	8
GND	Signal Ground	9
GND	Signal Ground	10
GND	Signal Ground	11
RESERVED	Reserved	12
OPEN	Open	13
RESERVED	Reserved	14
GND	Signal Ground	15
GND	Signal Ground	16
GND	Signal Ground	17
GND	Signal Ground	18
GND	Signal Ground	19
GND	Signal Ground	20
GND	Signal Ground	21
GND	Signal Ground	22
GND	Signal Ground	23
GND	Signal Ground	24
GND	Signal Ground	25
DB<0>	Data	26
DB<1>	Data	27

Code	Signal	Pin
DB<2>	Data	28
DB<3>	Data	29
DB<4>	Data	30
DB<5>	Data	31
DB<6>	Data	32
DB<7>	Data	33
DB<P>	Data	34
GND	Signal Ground	35
GND	Signal Ground	36
RESERVED	Reserved	37
TERMPWR*	Term Power	38
RESERVED	Reserved	39
GND	Signal Ground	40
-ATN	Attention	41
GND	Signal Ground	42
-BSY	Busy	43
-ACK	Acknowledge	44
-RST	Reset	45
-MSG	Message	46
-SEL	Select Out	47
-C/D	Control/Data	48
-REQ	Request	49
-I/O	Input/Output	50

SCSI II Terminator specifications

A Cable Single-Ended Active high density 50-pin Scanner Terminator plug	SCSI II, high density narrow terminator with internal shield, all plastic cover, low profile with spring latches

***Note:** Electrical power is supplied by TERMPWR.*

RS-232C Interface

This interface is provided for connection of the optional Operation Panel. It requires a standard RS-232C cross cable (3 meters maximum length) for connection. The scanner side of the cable should have a 25-pin male connector, while the other end of the cable should have a connector that matches the needs of your host computer.
The table below lists pin assignments for the RS-232C interface.

RS-232C pin assignments

Code	Signal	Pin
FG	Frame Ground	1
TXD	Transfer Data	2
RXD	Receive Data	3
SG	Signal Ground	7

All other pins of the RS-232C interface are not connected.

OPTIONS

This section describes the options that are available for this scanner. Options include an Image Processing Unit (IPU) and an Operation Panel.

Image Processing Unit

The optional Image Processing Unit (IPU) adds the following functionality:

- **Dynamic threshold** - the scanned image is automatically converted to line art using the appropriate threshold. The scanner discriminates a background color and determines the threshold to use.
- **Auto photo/letter** - the scanner automatically detects letter areas and photo areas from the original. The letter areas are scanned in line art and the photo areas are scanned in halftone.

Operation Panel

The optional Operation Panel and the Copy Application make it possible to use the scanner to produce printed copies.

For details of the Copy Application, please contact to your local dealer.

A. SCANNER FEATURES

SCANNER FUNCTIONALITY

This appendix contains descriptions and illustrations of the functions and features provided by your scanner, as well as illustrations of how your scanned images will output based on various specifications.

Note: *The scanner is controlled by the driver software you are using. Some software does not support all of the functions discussed in this appendix. The terminology used in this appendix may vary from that used by your driver software.*

Prescan

Function Scanning the entire image area at low resolution (50 dots per inch (dpi), 72 dpi to 100 dpi*).

Usage Use this function when you want to obtain a quick, low-resolution scanned image. You can adjust the scan area so that subsequent scans apply to exactly the portion of the original image that you want to scan.

* “dpi” stands for “dots per inch,” which is a measure of resolution. Sometimes “ppi” (pixels per inch) is used instead. The greater the resolution value, the finer the detail of the image.

Scan

Function Scanning a selected area of an image using the settings you specify.

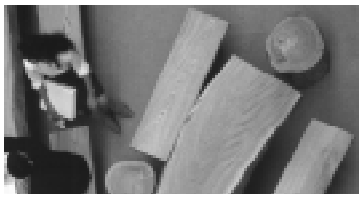
Usage Enter the settings you want to use, for example, the scan area, scanning composition, resolution, and so forth. Use **Scan** to scan the image using these parameters.

Determine the value of the settings based on the original and the output device (screen, printer, and so forth). When you scan an image at high resolution, you still cannot output it at high resolution when you are using a low resolution output device. Scanning an image at high resolution requires a greater amount of memory space and processing time.

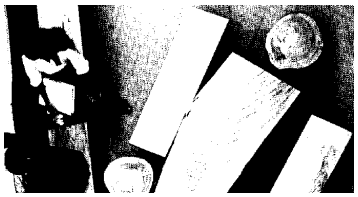
Scanning composition

Function You can scan using one of three compositions: binary, halftone, or multi-value. Binary scanning records only black and white from the original. Halftone scanning records gray shades from the original using a pattern of black and white dots. Multi-value scanning records grays over 16, 64, or 256 levels.

Usage Use binary scanning to scan an image that has no gray shading, for example, text or lines. Use halftone scanning to scan an image that has gray shading (for example, a photograph) when you want to print or display the image on a monochrome device, such as a laser printer. Use multi-value scanning to scan an image that has gray shading when you want to print or display the image on a gray scale device.



Original



Binary scanned image

Halftone scanned image

Multi-value scanned image

Binary Scanning - Threshold

Function Binary scanning converts every pixel included in the image to either black or white. When the image contains a gray area, the threshold value determines whether the scanner records the area as black or white. When the threshold value is high, the scanner records more pixels as black. When the threshold value is low, the scanner records fewer pixels as black.

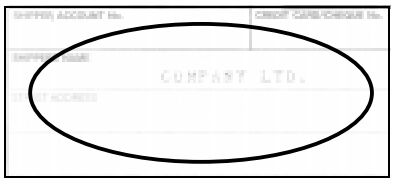
Usage Use a binary composition when you want to scan binary images such as text and line drawings, or black and white images that have no gray areas.

You can use either the manual threshold or the dynamic threshold method to set the threshold value in binary scanning.

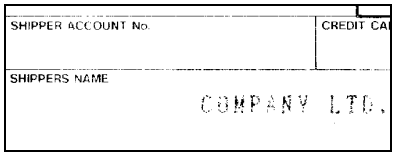
Manual threshold

Higher threshold

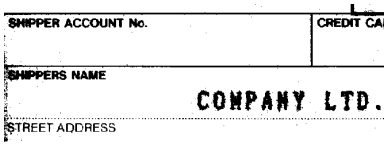
An entire image is converted to binary using a specific threshold. You can set a threshold value between 1 and 255. When scanning a light image, set the threshold higher. When scanning a dark image, set the threshold lower.



Original image



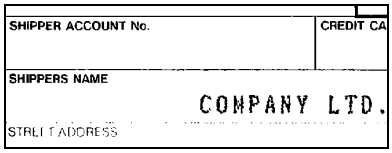
Lower threshold



Higher threshold

Dynamic threshold

The scanned image is converted to binary using an appropriate threshold. The threshold is determined by the scanner using an optional image processing unit.



Dynamic threshold

***Note**:Dynamic threshold is available only when the optional Image Processing Unit is installed.*

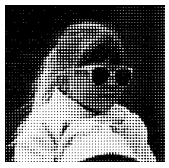
Halftone scanning

Function Creates the illusion of gray scales by simulating shades of gray from patterns of black and white dots.

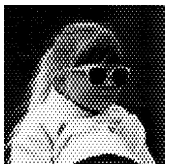
Usage Use halftone scanning when you are scanning an image that has gray shadings (for example, a photograph) when you want to print or display the image on a monochrome device, such as a laser printer. Halftoning requires less memory. Therefore, it is convenient for filing a large amount of image data. This scanner has eleven halftoning methods, including ten dithering methods and one error diffusion.

Original

8X4 45°



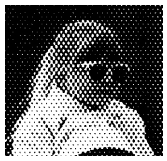
6X6 90°



8X6 60°

8X8 90°

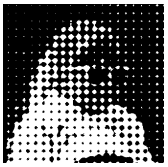
12X6 45°



10X8 60°

12X8 60°

16X8 45°



16X16 90°

8X8 Bayer

Error diffusion

Multi-value scanning

Function Multi-value scanning can record 4, 6, or 8 bits of information for each dot on the image. The 4-bit multi-value data represents 16 different shades of gray, the 6-bit data represents 64 shades of gray, and the 8-bit data represent 256 different shades of gray. Therefore, an 8-bit scan of an image requires eight times more space than a binary (1-bit) scan of the same image.

Usage Use multi-value scanning to scan an image that contains gray shading (for example, a photograph) when you want to print or display the image on a gray scale device. Select 4-bit, 6-bit, or 8-bit depending on the gray level capability of your output device.

Original

4-bit image

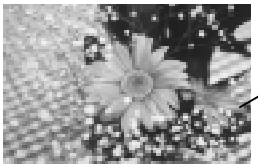
8-bit image

Area extraction

Function Extracts a rectangular area from the whole scannable area.

Usage Use area extraction when you want to extract a portion of an image. For example, when you want to extract a photograph from a page, define a rectangle over the photograph, as shown below. You determine the position of the area by setting the X and Y coordinates of the upper left corner of the rectangle. You determine the size of the area by setting the vertical and horizontal lengths, which you can set separately.

Original



Scanned image

Section area (multi-area settings)

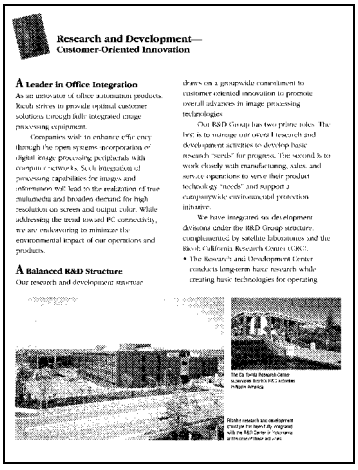
Function Within the scan area, you can set separate rectangular areas and define separate scanning modes, such as binary scanning, halftone scanning, or binary filters, for each area. You can specify up to six areas for one scan. These areas can be stacked and the last defined area is valid.

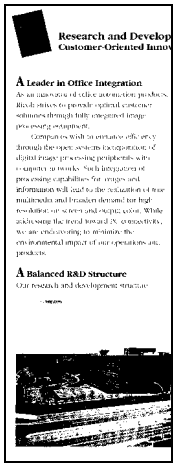
Note: *When you specify six areas scanning may not result in the correct mode, depending on how they are stacked. When this occurs, decrease the number of areas or the size of the areas, and reset the areas.*

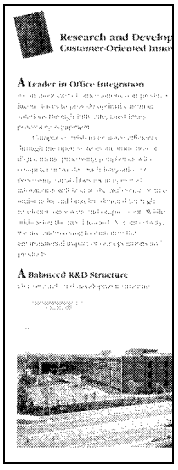
Usage When scanning an original that includes binary images and halftone images, you can scan each image with its own composition method in one scanning.

1.Set binary composition for the whole scannable area.
2.Set harftone composition for this area.
3.Set harftone composition for this area.
4.Set harftone composition for this area

Original/Example settings





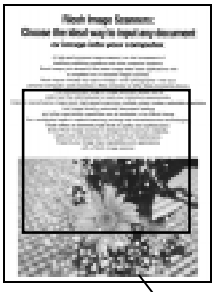


Auto photo/letter

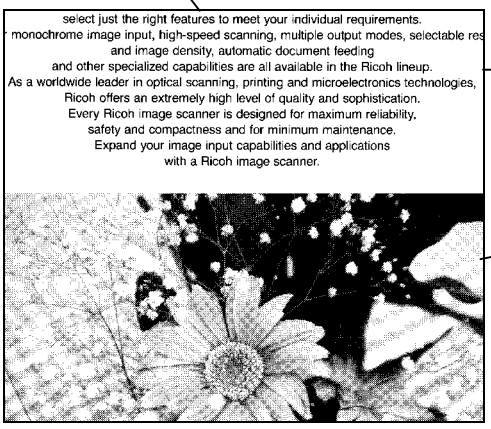
Function The auto photo/letter mode detects photograph (halftone) areas and letter (binary) areas of the original so that the binary areas are scanned in the binary mode, and the halftone areas are scanned in the halftone mode.

Note: *This function is available only when the optional image processing unit is installed in the scanner. When binary areas and halftone areas are not separated clearly, segmentation may not be achieved.*

Usage Scanning of an original that includes binary images such as letters and halftone images such as photographs.



Original


select just the right features to meet your individual requirements.
monochrome image input, high-speed scanning, multiple output modes, selectable res
and image density, automatic document feeding
and other specialized capabilities are all available in the Ricoh lineup.
As a worldwide leader in optical scanning, printing and microelectronics technologies,
Ricoh offers an extremely high level of quality and sophistication.
Every Ricoh image scanner is designed for maximum reliability,
safety and compactness and for minimum maintenance.
Expand your image input capabilities and applications
with a Ricoh image scanner.
Scanned in binary composition
Scanned in halftone composition

Scanned image

Resolution

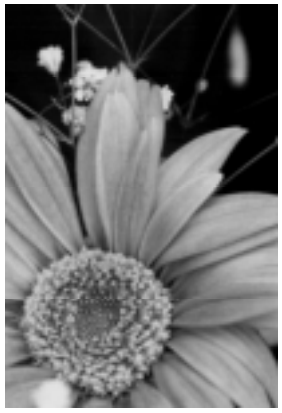
Function Sets vertical and horizontal resolution independently at 60, 75, and 100 to 800 dots per inch (dpi). The higher the resolution, the finer the detail. However, a high resolution image requires much more memory and processing time than a low resolution image.

Note: *When the resolution is set at more than 400 dpi, the maximum scanning width is less than 304 mm. Maximum resolution is 600 dpi in the Document Feeder Mode.*

Usage In general, setting the scanning resolution to the resolution of your output device results in high quality imaging. A lower resolution indicates lower quality and a higher resolution is a waste of memory. However, when you change the scale of your image, modify the resolution according to the scale.

Original

Lower



Higher

Brightness

Function Adjusts the brightness value between 1 and 255. A high brightness setting results in a lighter overall image, while a low brightness setting results in a darker overall image.

Usage When scanning a dark image, the darker area may display as deep black, even though it has gray scales. When this occurs, increase the brightness setting to allow the shades of to gray appear. When a lighter image displays as pure white, decrease the brightness setting

Lower

Higher

Contrast

Function Adjusts the contrast value between 1 and 255. A high contrast setting emphasizes black and white, leaving few middle gray shades, while a low contrast setting emphasizes middle gray shades at the expense of black and white.

Usage Set the contrast to a higher value for sharp contrast, and a lower value for a soft image.

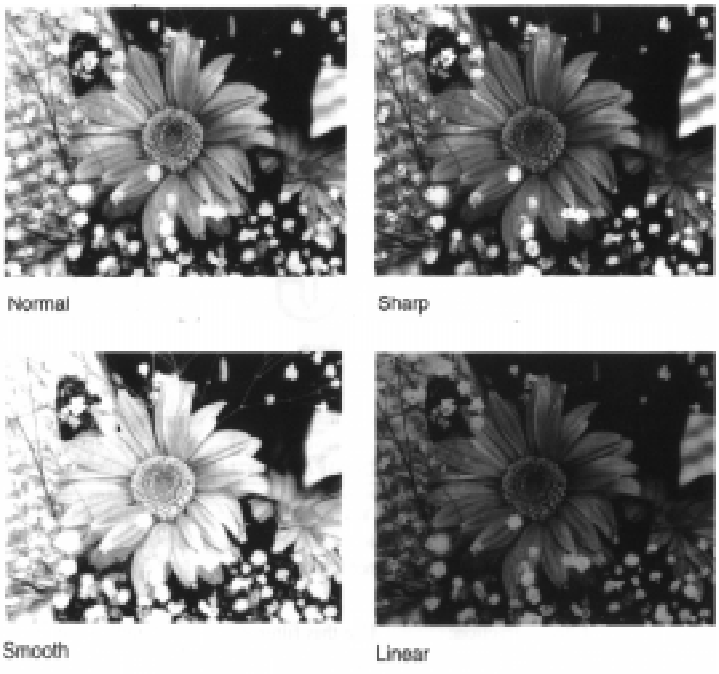
Lower

Higher

Gamma correction

Function Selects the following gamma correction settings:
Normal - emphasizes contrast slightly to improve a scanned image.
Sharp - emphasizes contrast to sharpen an image.
Smooth - weakens contrast to soften an image.
Linear - outputs an image as scanned.
User defined - loads user gamma correction curve into the scanner.

Usage Select one of the above settings, depending on your original and output device. When you want to perform fine correction of an image, select the “User defined” setting to load your own gamma correction curve to the scanner.



Binary filter

Function You can use the following binary filters for binary scanning:
Noise elimination - eliminates independent black or white dots.
Smoothing - flattens uneven dots.
Thickening black lines - thickens thin lines.
Edge extraction - extracts outlines of the image.

Usage Use these filters as shown below.

Noise elimination

Use this filter when scanning a document that has been copied several times. Black dots in a white area and white dots in a black area are eliminated.

Smoothing

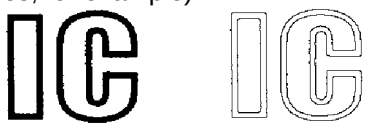
When edges of a scanned image are uneven, scan the image again with this filter to even out the edges.

Thickening black lines

Use this filter when scanning thin lines or characters.

Edge extraction

Use this filter when you want to obtain outlines of an image, (for design purposes, for example).



Parameter download

Function Downloads a gamma curve and a dither pattern to the scanner. You can modify the scanned image with your gamma curve and convert it to binary using your dither pattern. ☛ Refer to your software manual for information on how to download these parameters to the scanner.

Document size detection

Function The scanner automatically detects the size of originals placed on the document feeder.

Note: *The paper sizes the scanner can use are determined by the setting of DIP Switch 3 on the back of the scanner. Setting DIP Switch 3 to OFF specifies letter/double-letter, while ON specifies A4/A3.*

Semi-automatic document feed mode

Function In the semi-automatic document feed (SADF) mode, originals that are set on the feeder one at a time are automatically fed into the document feeder and scanned one at a time.

IS410 Mode

Function Turning on DIP switch 4 turns on the IS410 Mode, which makes it possible to use the scanner with an IS410 driver.

GLOSSARY

ACRONYMS

This section contains a list of the acronyms you may use while working with the scanner and the scanner documentation.

ADF	Automatic Document Feeder
dpi	dots per inch
I/O	Input/Output
LED	Light Emitting Diode
MB	Megabyte
PC	Personal Computer
ppm	pages per minute
RAM	Random Access Memory
ROM	Read Only Memory
SCSI II	Small Computer Systems Interface type two.

TERMS

This section contains a list of the terms you may use while working with the scanner and the scanner documentation.

application Software program, or programs used to process information.

asynchronous Data communication transmissions that are controlled by start and stop characters, causing the time intervals between the transmission of data blocks to be unequal in length.

baud rate Establishes the transmission speed of data for a serial connection between the machine and a host computer.

bit Abbreviation for a binary digit. This is the smallest unit of information recognized by a computer.

bps Bits per second. The rate at which data is transferred during serial communication.

buffer Area of memory used for storage during the transfer of data between two devices.

byte Number of bits (usually fixed at 8) that are processed as a single binary value.

configuration Settings required to allow your computer to communicate properly with the machine. Also describes the process of specifying the required settings.

default Value retained in memory for use when input is not specified by the user for a required variable.

dot Scanned element (in pixels). The number of dots scanned per inch is used to measure the total resolution (300 dots per inch).

dpi	Dots per inch. The number of dots that scan in an inch. These are used to form a character or graphic on the scanned page.
drivers	Software used to provide scanner characteristics.
image area	Area of the scanned page that can contain graphics or text.
initialize	Setting all computer system information to the starting or default values.
landscape	Orientation in which graphics and text are scanned parallel to the long edge of the page.
long-edge feed	Moving the paper through the scanner in the direction of the paper length.
MB	Megabyte. Unit made up of one million bytes.
orientation	Specifies whether the lines on the scanned output are parallel to the long edge of the paper (landscape) or the short edge of the paper (portrait).
origin	Upper left corner of a page.
physical page	Actual page size.
pixel	Acronym for a single element of a picture. This is the smallest addressable point on a bitmapped screen to which color and intensity can be assigned independently.
point	Unit of measure that is equal to 0.0139 of an inch. Used to express type, size, and leading spaces. There are 12 points to a pica and approximately 72 points to an inch. See also *pica*.
RAM	Random Access Memory. Portion of memory where data, macros, and downloaded fonts are stored.

raster graphics	Graphic created using a pattern of dots.
Raster image processor	Processor board (RIP) that builds a raster image that is passed to the scanner.
rasterization	Transformation of an image onto a page using bitmap dots.
resolution	Number of dots per inch (dpi) or spots per inch (spi). The greater the number of dots or spots per inch, the higher the resolution and the clearer the image. The terms dots, spots, and pixels are synonymous.
scale	Adjusting font or image size according to specified proportions.
Scanner driver	Software that allows a host computer to communicate with a scanner.
short-edge feed	Moving the paper through the scanner in the direction of the paper width (the short side of the paper).
spot	Single element of a picture imaged by the scanner (also called a dot or a pixel).

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